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Federal Automated Information System of Nuclear Material Control and Accounting: Uniform System of Reporting Documents

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Abstract

One of the fundamental regulations of the Russian State System for Nuclear Material Accounting and Control (SSAC), "Basic Nuclear Material Control and Accounting Rules," directed that a uniform report system be developed to support the operation of the SSAC. According to the "Regulation on State Nuclear Material Control and Accounting," adopted by the Russian Federation Government, Minatom of Russia is responsible for the development and adoption of report forms, as well as the reporting procedure and schedule.

The report forms are being developed in tandem with the creation of an automated national nuclear material control and accounting system, the Federal Information System (FIS). The forms are in different stages of development and implementation. The first report forms (the Summarized Inventory Listing (SIL), Summarized Inventory Change Report (SICR) and federal and agency registers of nuclear material) have already been created and implemented. The second set of reports (nuclear material movement reports and the special anomaly report) is currently in development. A third set of reports (reports on import/export operations, and foreign nuclear material temporarily located in the Russian Federation) is still in the conceptual stage.

To facilitate the development of a unified document system, the FIS must establish a uniform philosophy for the reporting system and determine the requirements for each reporting level, adhering to the following principles:

- Completeness—the unified report system provides the entire range of information that the FIS requires to perform SSAC tasks;
- Requisite level of detail
- Hierarchical structure—each report is based on the information provided in a lower-level report and is the source of information for reports at the next highest level;
- Consistency checking—reports can be checked against other reports;

A similar philosophy should eliminate redundancy in the different reports, support a uniform approach to the contents of previously developed and new reports within the FIS, as well as identify the main priorities for the direction of the FIS.

Introduction

As it is stipulated in the "Basic Nuclear Material Control and Accounting Rules," which is one of the key regulatory documents for the State System for Nuclear Material Accounting and Control (SSAC) of Russia, a uniform system of reporting documents is to be established in support of the Federal Nuclear Material Control and Accounting Information System (FIS).

I. Key Principles of the Uniform System of Reporting Documents

At present, some of the reporting forms have already been created, others are being developed, and still others are only being discussed at the conceptual level. However, regardless of the degree of readiness of these forms, a uniform reporting system must comply with the following principles:

- Objectivity – all reports must be based on documented data;
- Completeness – the uniform reporting system provides the FIS with all the information required to perform SSAC tasks;
- Adequacy – each report must only contain the information subject to reporting in this particular form, and nothing else;
- Hierarchy – each report is based on lower level reports, and provides information for higher level reports;
- Consistency checking – all reports make a uniform system; reports can checked against other reports.

II. Levels of the Uniform Reporting System

The uniform reporting system structure is based on the same principle of hierarchy as the SSAC, i.e., it comprises documents of the following levels:

- Material Balance Area (MBA);
- Organization handling nuclear material;
- Federal Executive Authority, which carry out state nuclear material control and accounting at the agency level;
- Federal level.

III. MBA Reporting Documents

It should be noted that the MBA reporting documents have a special status within the uniform reporting system. On the one hand, the content of such reports can take into consideration the needs of the organization handling the material with respect to its technological and organizational characteristics. On the other hand, the MBA reports should be uniform to the greatest extent possible, in terms of their format and information content. This format and the information contained within the reports will be used to generate higher level reports. The organization has the option of including additional information in the MBA reporting documents to meet their specific requirements. Minatom of Russia, which has been authorized to create the SSAC, shall develop the general requirements and model contents of the MBA reports such as **physical inventory listing, material balance report and inventory change report**. Based on these requirements and model contents, the organizations will create their own reporting forms.

Physical Inventory Listing (PIL) is prepared after any physical inventory in the MBA and is submitted to the material accounting division of the operating organization. Upon completion of the physical inventory, the material balance is determined based on PIL and book inventory listing (IL) data.

PIL is the key accounting document for MBAs. Based on the PIL data (after making all the necessary changes with inventory change reports), the database the nuclear material inventory is updated at the MBA level and, finally, at the organization level.

Material Balance Report (_BR) is generated and approved by the physical inventory commission.

MBR is based on the calculation of inventory difference resulting from the physical inventory. MBR consists of:

- PIL based on the results of the previous physical inventory,
- Information on any increases and decreases of the material that took place during the Balance Period (BP),
- Calculated inventory difference for all nuclear material kinds present in the MBA,
- PIL based on the results of the current physical inventory.

MBR also includes data on the procedure and results of the inventory difference assessment.

Inventory Change Report (ICR) contains information on all the inventory changes that took place in the MBA.

The ICR is used to make the necessary adjustments based on the PIL data and to update the database on the inventory and composition of the material present in the MBA.

ICR is submitted to the material accounting division of the operating organization:

- Immediately after any inventory change (for such MBAs where inventory changes are relatively rare) including shipments and receipts;
- Monthly (for such MBAs where changes happen quite often or continuously, e.g., nuclear material production), but no later than 15 days after the last day of the month during which the changes took place).

IV. Reporting Documents of the Operating Organization

The reporting documents of the operating organization include:

- Information on the organization handling nuclear material (INOR)
- Summarized Inventory Listing (SIL)
- Summarized Inventory Change Report (SICR)
- Reports on nuclear material movements (_D1 and _D2)
- Special report on anomaly in nuclear material control and accounting (SR)
- Reports on nuclear material export/import.

The purpose of **INOR** is to regulate centralized collection by the FIS of the quasi-constant information on organizations and their nuclear material control and accounting systems.

SIL and **SICR** forms were developed and put into operation in 2001. Since 2002, the SIL and SICR reports have been forwarded to the FIS.

The SICR does not include all MBA ICRs. Changes that are internal to the MBA that do not result in a change in the material balance (e.g., re-batching or change in form) or for transfers between MBAs are not included in the SICR.

Each organization is to submit a regular SIL report annually by January 15th of the year following the reporting year, and a regular SICR report - quarterly by the 15th of the month following the reporting quarter.

Records on the reported batches of the organization's material are to be entered into the SIL and SICR tables of regular and corrected reports.

The reported batch is the summarized data on the quantity of all the organization's nuclear material having the same attributes:

- Identifier given by the organization;
- Program for nuclear material use;
- Nuclear material kind;

- Nominal percent enrichment;
- Physical form;
- Chemical form;
- Purity and irradiation status;
- Legal status (the organization that handles (or has on its balance) this material, otherwise indication that this material is foreign property).

For each reported batch included in the SIL, the combination of the above attributes must be unique.

For all the batches in the SIL and the SICR reports, it is necessary to indicate master alloy weight and masses of the element and reported isotopes.

Movement reports include:

- Preliminary notice of shipment, submitted in the OD1 form;
- Shipment confirmation submitted in the OD2 form;
- Notice of receipt, submitted in the OD2 form;
- Receipt confirmation, submitted in the OD1 form.

OD1 reports are to be submitted to the federal executive authority, under whose jurisdiction the organization is placed, if appropriate, to Minatom of Russia, to Gosatomnadzor (Nuclear Regulation Authority of Russia), and to the shipper/receiver. The reports contain detailed information on quantity and composition of the material that the organization intends to deliver or has received.

OD2 reports are submitted to Minatom of Russia (Situation and Crisis Center Watch Office). The reports contain brief information confirming the shipment or receipt of the material.

Special anomaly report (SR) on an anomaly in nuclear material control and accounting is to be submitted immediately to the federal executive authority, under whose jurisdiction this organization is placed, and to Minatom of Russia, to Gosatomnadzor of Russia, and to the Ministry of Health. Additionally, a written report is to be submitted within three days.

Export/import reports are to be submitted to Minatom of Russia by the legal entities - nuclear material exporters or importers - within 10 days after the date of shipment or receipt.

V. Agency Nuclear Material Registry

At the agency level, the federal executive authorities generate agency nuclear material registries as a reporting document.

The Agency Registry consists of two parts:

1. Organizations handling nuclear material;
2. Quantity of Nuclear material.

Agency registries are to be submitted to Minatom of Russia no later than February 1st of the year following the reporting year.

VI. State Nuclear Material Registry

The State Nuclear Material Registry is the major document of the SSAC.

The State Registry consists of four parts:

1. Organizations handling nuclear material.
2. Summarized listing of nuclear material, products and articles subject to be included into the State Nuclear Material Registry of the Russian Federation.
3. Summarized data on the nuclear material as a whole.
4. Summarized data on the nuclear material present at the federal executive authorities, as well as at the organizations beyond jurisdiction of the federal executive authorities.

The State Registry is generated and corrected by Minatom of Russia annually based on the agency registries and reports of the organizations handling nuclear material that are beyond jurisdiction of the federal executive authorities, no later than April 1st of the year following the reporting year.

The forms of the State and Agency Registries were developed and implemented by Minatom of Russia in coordination with the Ministry of Property Relations of the Russian Federation.

Conclusion

In order to regulate the requirements for the reporting documents of the SSAC, and to apply the above principles for the reporting documents at all levels, a regulation will be developed entitled "Uniform System of Reporting Documents within the State Nuclear Material Control and Accounting System. Basic Requirements."